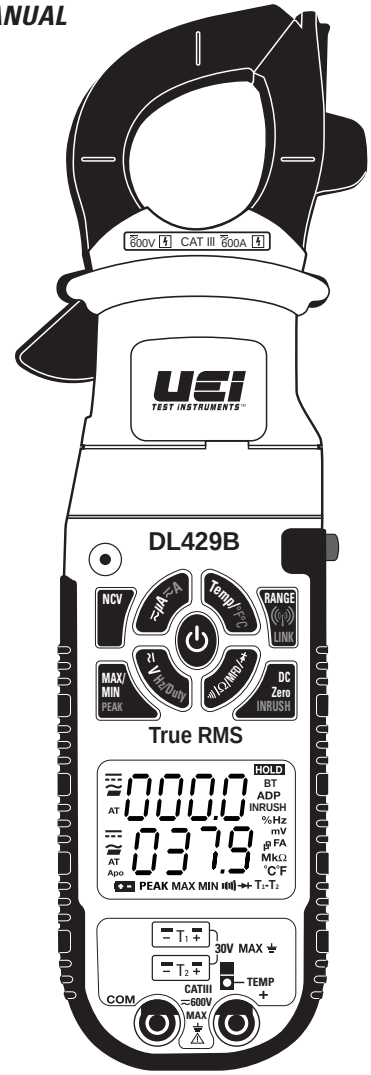
UEI TEST INSTRUMENTS

DL429B

True RMS Wireless Clamp Meter w/ Differential Temperature

INSTRUCTION MANUAL

ENGLISH



Intertek

600V CAT III

RoHS Compliant

Available on the App Store

ANDROID APP ON Google play

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FUNCTIONS

- **True RMS**
- **750V AC/1000V DC**
- **600A AC/DC**
- **Differential temperature**
- **AC/DC microamps: 2000µA**
- **Capacitance: 2000µF**
- **Frequency: 99.99kHz**
- **Duty cycle**
- **Diode test**
- **Audible continuity**
- **NCV**
- **LRA Inrush**
- **DC Zero**
- **Temperature range: -328˚ to 2462˚F**
- **Resistance: 60MΩ**

FEATURES

- **Wireless capability**
- **Free App**
- **Dual display**
- **Auto/Manual ranging**
- **Worklight**
- **Back light**
- **Low battery indicator**
- **Peak Hold**
- **Data Hold**
- **Auto power off**
- **Test lead storage**
- **Auto calibration**
- **Magnetic mount**
- **Visible high-voltage alert**
- **Input jack locks**
- **Min/Max**

GENERAL SPECIFICATIONS

- **Operating Temperature:** 32˚ to 122˚F (0˚ to 50˚C)
- **Storage Temperature:** -4˚ to 140˚F (-20˚ to 60˚C)
- **Operating Humidity:** <80%
- **Pollution Degree:** 2
- **Display:** 3 5/6 digits 6,000 count
- **Back light:** Yes
- **Refresh Rate:** 3/sec
- **Over-range:** "OL" is displayed
- **Dimensions:** 10.2 x 2.5 x 1.5"
- **Item Weight:** 0.95 lb.
- **CAT Rating:** CATIII 600V
- **Certifications:** cETLus UL 61010-1: 2012
  CE EN 61010-1: 2010, EN 61010-2-032: 2012
  EN 61010-2-033: 2012, EN 61326-1: 2013
  RoHS Compliant, IP42, 6' Drop Protection
- **Battery Type:** (AAA) 6
- **Test Leads:** Test leads w/ alligator clips

IMPORTANT SAFETY WARNINGS

⚠ **WARNING**

Read entire Safety Notes section regarding potential hazards and proper instructions before using this meter. In this manual the word "**WARNING**" is used to indicate conditions or actions that may pose physical hazards to the user. The word "**CAUTION**" is used to indicate conditions or actions that may damage this instrument.

⚠ **WARNING**

To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury or death.

⚠ **WARNING**

- Before each use, verify meter operation by measuring a known voltage or current.
- Never use the meter on a circuit with voltages that exceed the category based rating of this meter.
- Do not use this meter during electrical storms or in wet weather.
- Do not use the meter or test leads if they appear damaged.
- Ensure meter leads are fully seated and keep fingers away from the metal probe contact when making measurements. Always grip the leads behind the finger guards molded into the probe.
- Do not open the meter to replace batteries while the probes are connected.
- Use caution when working with voltages above 60 DC or 25 AC RMS. Such voltages pose shock hazards.
- To avoid false readings that can lead to electrical shock, replace batteries if a low battery indicator appears.
- Unless measuring voltage or current, shut off and lockout power before measuring resistance or capacitance.
- Always adhere to national and local safety codes. Use proper personal protective equipment (PPE) to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Always turn off power to a circuit or assembly under test before cutting, unsoldering or breaking the current path. Even small amounts of current can be dangerous.
- Always disconnect the live test lead before disconnecting the common test lead from the circuit.
- In the event of electrical shock, ALWAYS bring the victim to the emergency room for evaluation, regardless of victim's apparent recovery. Electrical shock can cause unstable heart rhythms that may need medical attention.
- If any of the following occur during testing, turn off the power source to the circuit being tested: arching, flame, smoke, extreme heat, smell of burning materials or discoloration or melting of components.

⚠ **WARNING**

Higher voltages and currents require greater awareness of physical safety hazards. Before connecting the test leads; turn off power to the circuit under test, set meter to the desired function and range; connect the test leads to the meter first, then connect to the circuit under test. Reapply power. If an erroneous reading is observed, disconnect power immediately and recheck all settings and connections.

⚠ **WARNING**

This meter is designed for trade professionals who are familiar with the hazards of their trade. Observe all recommended safety procedures that include proper lockout utilization and use of personal protective equipment that includes safety glasses, gloves and flame resistant clothing.

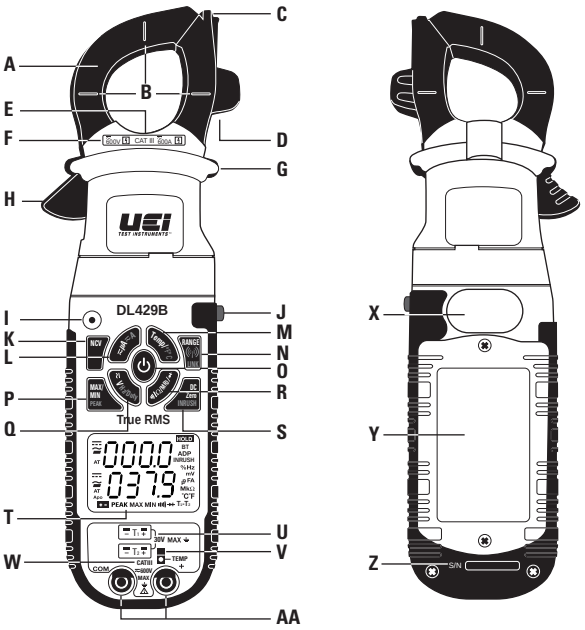
SYMBOLS

~	AC (Alternating current)	⎓	DC (Direct current)
▬	Negative	≂	AC/DC Voltage or Current
AT	Auto-ranging	OL	Overload: Range Exceeded
Apo	Auto power off Active	NCV	Non-Contact Voltage
	Low Battery	HOLD	Hold/Capture Value
MIN	Minimum measured value displayed	MAX	Maximum measured value displayed
%	Duty Cycle	Hz	Hertz/Frequency
V	Voltage		Link
A	Amperage	Ω	Ohms/Resistance
	Diode	MFD	Capacitance
nF	Nanofarad	µF	Microfarad
µA	Microamps		Continuity
°F	Degrees Fahrenheit	°C	Degrees Celsius
M	Mega (x10^6 or 1,000,000)	m	Milli (x10^{-3} or 0.001)
k	Kilo (x10^3 or 1,000)	µ	Micro (x10^{-6} or 0.000001)
⚠	Warning or Caution	⏚	Ground
⚠	Dangerous Levels	⧈	Double Insulation (Protection to Class II)
⚡	Safe for disconnect from live conductors		

CATEGORY DEFINITIONS

Measurement Category	Short-Circuit (typical) kA[a]	Location in the building installation
II	< 10	Circuits connected to mains socket outlets and similar points in the MAINS installation
III	< 50	Mains distributions parts of the building
IV	> 50	Source of the mains installation in the building

OVERVIEW



A. Clamp: Measure inductive AC/DC current. Opens to 1.25" (31.7mm).

B. Conductor Alignment Marks: Use to aid the visual alignment of a conductor when measuring inductive amperage. Greatest accuracy is achieved when the conductor inside the clamp is centered at the intersection of these marks.

C. Wire Separation Tab/ NCV sensor: Use to isolate an individual wire from a bundle for testing. NCV sensor detects live voltage.

D. Test Lead Holder

E. Worklight: Lights clamp area in dark work environments.

F. Category Max Indicator: Maximum CAT Rating for clamp jaw.

G. Hand Guide: Used as a point of reference for the operator's safety.

H. Clamp Lever: Opens and closes current clamp jaw.
NOTE: *The clamp uses a high-tension spring to close the jaw. Do not allow fingers or objects to become pinched in the base as the jaws close.*

I. NCV Alert Light: Indicates voltage when in NCV (Non Contact Voltage) mode and High Voltage alert.

J. Hold/Worklight/ Back light Button:
- Press to hold the reading on the display. Press again to return to live reading.
- Press and hold to turn on Worklight and Back light. Press and hold again to turn off.
- Worklight and Backlight turn off after 60 seconds.

K. NCV Button: Press and hold for Non-Contact voltage detection mode.

L. AC/DC Amps/ Microamps Button:
- Press to enter AC/DC Microamps (µA) mode; (AC/DC microamp lower display).
- Press and hold to enter AC/DC Amps mode; (AC/DC Amps upper display).

M. Temperature Button:
- Press to enter temperature mode for T1 (upper temperature input jack).
- Press again to enter temperature mode for T2 (lower temperature input jack).
- Press again to enter temperature differential mode (T1-T2).
- Press and hold to change temperature scale.

OVERVIEW (CONT.)

N. Range/Link Button:
- Press repeatedly to cycle through manual ranges.
- Press for 1 second to return to auto range mode.
- Press for 2 seconds to activate Wireless Link
- Press for 2 seconds to turn Wireless Link off

O. Power Button: Press and hold to turn on and off the meter.

P. Min/Max/ Peak Button:
- Press to enter Min/Max mode. Max is the default setting.
- Press repeatedly to cycle through Min/Max captured values.
- Press and hold to return to live readings.
- Press and hold to enter Peak mode.
- Press and hold again to return to live readings.

Q. AC/DC Volts/ Hertz (Hz)/ Duty Cycle Button:
- Press to enter AC Voltage mode.
- Press again to enter DC Voltage mode.
- Press and hold to enter Hertz (Hz)/Duty Cycle modes.
- Press to return to live readings.

R. Continuity/ Resistance/ Capacitance/ Diode Test Button:
- Press to enter Continuity mode.
- Press again to enter Resistance mode.
- Press again to enter Capacitance mode.
- Press again to enter Diode test mode.

S. DC Zero/ Inrush Button:
- Press to Zero the DC clamp reading.
- Press and hold to enter LRA Inrush mode (must be in AC Amp mode first).
- Press and hold again to return to live readings.

T. Display:
- High contrast dual backlit display.
- Amps (AC/DC) reading will always display on upper display.

U. K-Type Temperature Probe Inputs: T1 (Upper) and T2 (Lower)

V. Input Jack Lock: Switch to use Temperature or Test lead inputs

W. Category Max Indicator: Maximum CAT Rating for input jacks.

X. Magnetic Mount: For hands-free work.

Y. Battery Cover: Easy access for replacing batteries without breaking calibration seal.

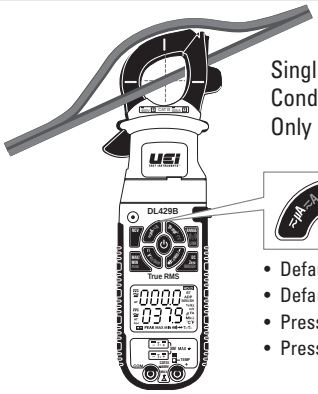
Z. Serial Number

AA. Test Lead Input Jacks: Multifunction and Positive input jacks.
- Multifunction input port used for measuring: AC or DC volts, resistance, continuity, diode, capacitance and AC or DC µA.

Apo: Auto power off after 30 minutes of use.

Detachable Clamp Head: Compatible with industry standard meter reads. (ADP will appear on display). Press DC Zero button to zero the head reading.

AC Amps: < 600A – Jaw



Single Conductor Only

- Default = ~ (upper)
- Default = $\overline{\underline{\mu A}}$ (lower)
- Press x1 = $\widetilde{\mu A}$ (lower)
- Press and hold = ⎓ (upper)

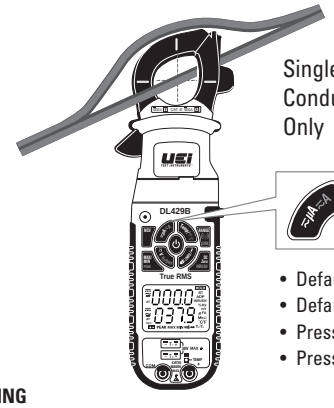
- Center wire in guides for best accuracy.
- Opposing currents cancel each other (use line-splitter when necessary).
- Keep hands below guard when measuring high current levels.
- Do not attempt to measure more than 600A AC.

Features: RANGE LINK, HOLD, MAX/MIN PEAK, DC Zero INRUSH

Range	Resolution	Accuracy	Overload Protection
60A	0.01A	±(2.0% +8 dgts)	600V RMS
600A	0.1A		

45Hz to 400Hz True RMS
Minimum current for Clamp measurement: 0.3A

DC Amps: <600A – Jaw



Single Conductor Only

- Default = ~ (upper)
- Default = $\overline{\underline{\mu A}}$ (lower)
- Press x1 = $\widetilde{\mu A}$ (lower)
- Press and hold = ⎓ (upper)

⚠ **WARNING**

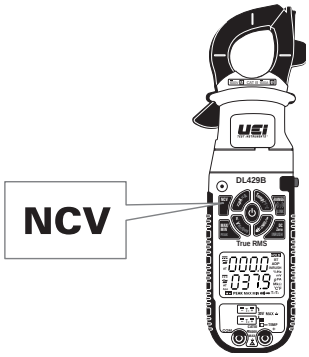
- Do not attempt to measure more than 600A DC.

Features: RANGE LINK, HOLD, MAX/MIN PEAK, DC Zero INRUSH

Range	Resolution	Accuracy	Overload Protection
60A	0.01A	±(2.0% +8 dgts)	600V RMS
600A	0.1A		

Minimum current for Clamp measurement: 0.3A

Non-Contact Voltage

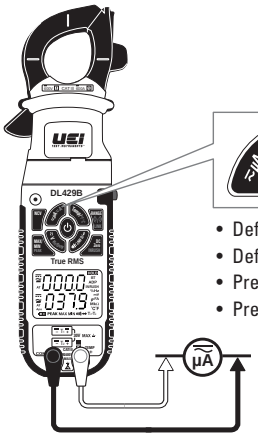


NCV Sensor in the tip.

- Press and hold the **NCV button** and move the tip of the clamp meter near voltage source.
- Non-Contact Voltage Detection is used to detect power with sensor located in the tip of the clamp head, indicates positive response with both an Audible and Visual alert.
- Do not use Non-contact voltage detector to determine if there is current on the wire. Detection operation could be affected by socket design, insulation thickness, type or other factors.
- Voltage indicator light may also light when voltage (>AC/DC 30V) is present on the meter's input jack or from an external interference such as motors, flashlights, etc.

On Voltage
Approx. 24V AC

AC/DC Low Amps: <2000µA



- Default = ~ (upper)
- Default = ⎓ µA (lower)
- Press x1 = ~ µA (lower)
- Press and hold = ⎓ (upper)

⚠ **WARNING**

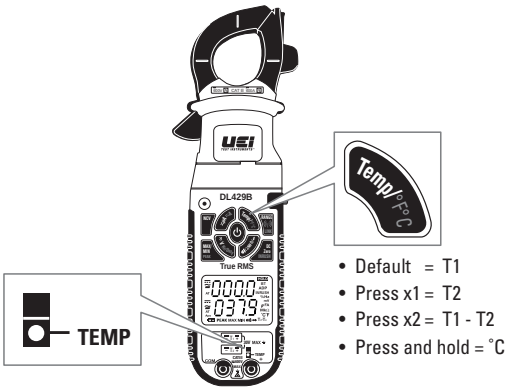
• Do not attempt to measure more than 2000µA.

Features: RANGE LINK, HOLD, MAX/MIN PEAK

Range	Resolution	Accuracy	Overload Protection
600µA	0.1µA	± (1.2% +3 dgts)	600V RMS
2000µA	1µA		

True RMS: 45Hz to 400Hz

Temperature F˚/C˚

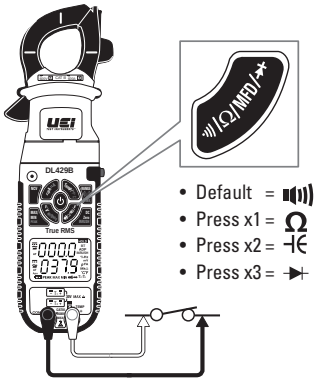


Range	Resolution	Accuracy	Overload Protection
-328˚F to 999˚F (-200˚ to 999˚C)	0.1°F (0.1˚C)	±(1.0% +3.6˚F) ±(1.0% + 2.0˚C)	30V RMS
1000˚F to 2462˚F (1000˚ to 1350˚C)	1°F (1˚C)		

- Disconnect test lead probes from voltage source and meter.
- Move Input Jack Locks to "TEMP" setting.
- Use K-Type thermocouple temperature probes only.
- Stated accuracy does not account for thermocouple accuracy.

Features: HOLD, MAX/MIN PEAK

Continuity



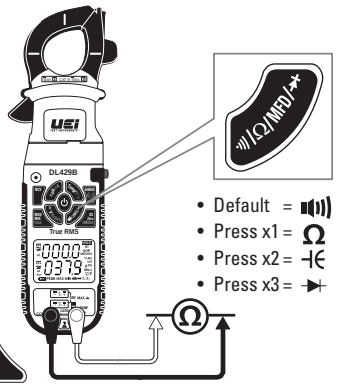
- Buzzer sounds at less than < 40Ω.

⚠ **WARNING**
- Do not measure resistance on a live circuit.

Features: MAX/MIN PEAK, HOLD

Open Circuit V <1.00V	Overload Protection
Threshold Approx. <40Ω	600V RMS

Resistance: < 60MΩ



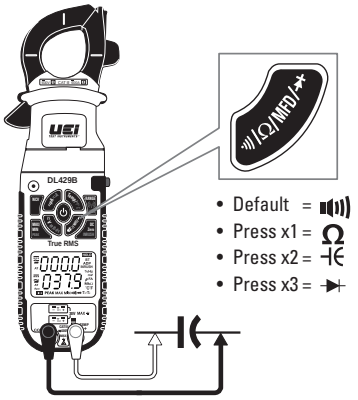
Features:

⚠ **WARNING**

• Do not measure resistance on a live circuit.

Range	Resolution	Accuracy	Overload Protection
600Ω	0.1Ω	± (0.8% +3 dgts)	600V RMS
6kΩ	1Ω		
60kΩ	10Ω		
600kΩ	100Ω		
6MΩ	1kΩ		
60MΩ	0.01MΩ	± (1.2% +3 dgts)	

Capacitance (MFD)



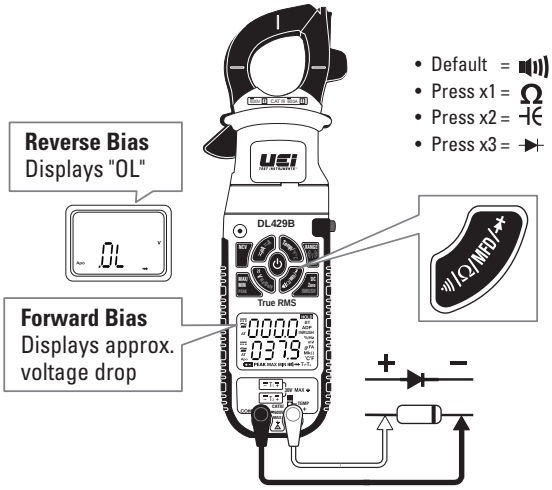
Features:

Range	Resolution	Accuracy	Overload Protection
10.00nF	0.01nF	± (3.0% +5 dgts)	600V RMS
100.0nF	0.1nF		
1.000µF	0.001µF		
10.00µF	0.01µF		
100.0µF	0.1µF		
2000µF	1µF		

⚠ **WARNING** To avoid damaging the meter or equipment under test, safely discharge Capacitors before measuring capacitance. Large value capacitors should be discharged through an appropriate resistance load. Use the DC Voltage function to confirm the capacitor discharge.

Diode

GOOD DIODE



BAD DIODE

Open Diode
Displays "OL"
Both directions

or

'0' Both directions

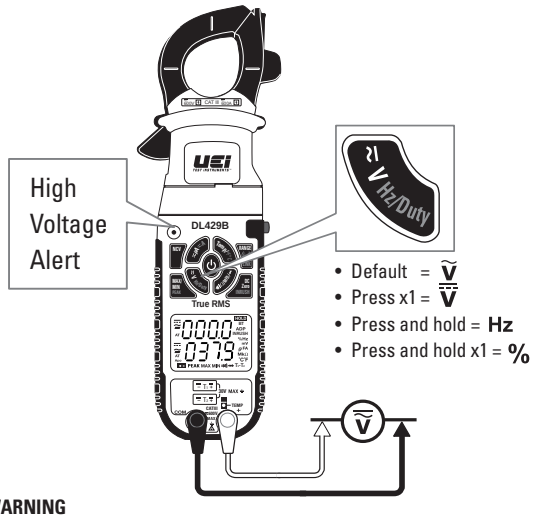
- Forward voltage drop if forward biased.
- "O.L." if reverse biased.

Features:

Diode Test

Range	Open Circuit V	Test Current	Overload Protection
3.0V	<3.2V DC	0.25mA	600V RMS

Voltage: AC 750V / DC 1000V



⚠ WARNING

- Use CATIII rated test leads or higher.
- Do not attempt to measure more than 750V AC/1000V DC.
- Keep hands below line when measuring high current levels.
- Do not exceed 25 volts AC or DC – RMS at either the common or multifunction input ports as measured from earth ground.
- Select AC or DC Voltage.

⚠ WARNING

- High Voltage indicator will display and audible alert will sound over 600V AC/DC
- AC/DC and High Voltage indicator will display (without audible alert) over 30V AC/DC

Features: RANGE LINK, HOLD, MAX/MIN PEAK

AC Volts

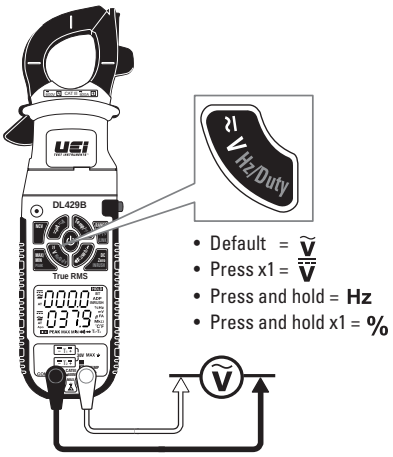
Range	Resolution	Accuracy	Overload Protection
600mV	0.1mV	± (1.0% +3 dgts)	1000V RMS
6V	1mV		
60V	10mV		
600V	100mV		
750V	1.0V		

True RMS: 45Hz to 400Hz

DC Volts

Range	Resolution	Accuracy	Overload Protection
600mV	0.1mV	± (0.5% +4 dgts)	1000V RMS
6V	1mV		
60V	10mV		
600V	1000mV		
1000V	1V	±(0.8% +5 dgts)	

Frequency (Hz) / Duty Cycle



⚠ **Use CAT III rated leads or higher.**

Press the AC/DC volts button to select AC voltage, press and hold the button for Frequency and Duty Cycle modes.

⚠ **WARNING**

Do not attempt to measure more than 750V AC/1000V DC.

Features: RANGE LINK, HOLD, MAX/MIN PEAK

Frequency

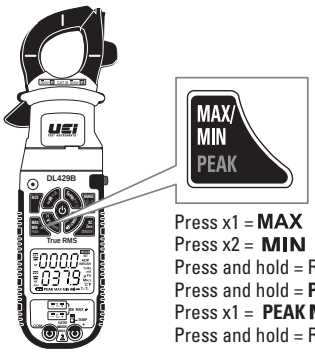
Range	Resolution	Accuracy	Overload Protection
99.99Hz	0.01Hz	± (0.1% +3 dgts)	600V RMS
999.9Hz	0.1Hz		
9.999kHz	1Hz		
99.99kHz	10Hz		

Duty Cycle

Range	Resolution	Accuracy	Overload Protection
1.0 to 99.0%	0.1%	±(0.2% per kHz + 0.1% + 5dgts)	600V RMS

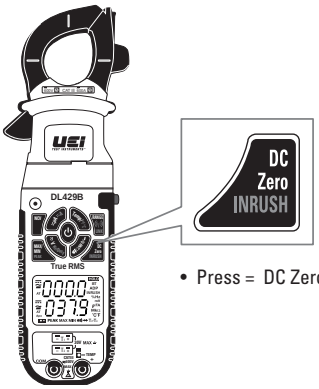
Frequency Sensitivity: 1.8Vrms

Min/Max/Peak



Press x1 = **MAX**
Press x2 = **MIN**
Press and hold = Return to live readings
Press and hold = **PEAK MAX**
Press x1 = **PEAK MIN**
Press and hold = Return to live readings

Zero DC Amps



• Press = DC Zero

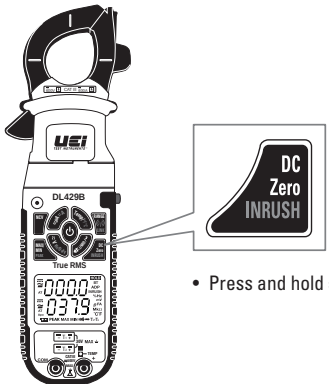
Select DC current.

- Press to zero any offset in Amps DC.
- Used to monitor change from present displayed value.
- Required during DC Amps measurement to establish a zero level.

⚠ **WARNING**

Do not use DC Zero mode at amps greater than 600A DC.

LRA Inrush



• Press and hold = LRA Inrush

The UEi LRA Inrush is programmed to properly capture the starting current for compressor motors.

- Select AC Amps.
- Select the range capable of capturing the maximum value.
- Press and hold the DC Zero/ LRA Inrush button – INRUSH will now be shown on the screen.
- Activate the compressor and read value on the display.
- Press and hold the DC Zero/ LRA Inrush button to return to live readings.

Connecting and Using the App

- Search for App as, "**DL429B**"
- Compatible with iPhone® 4X and up running iOS7 or higher, Galaxy S4, Nexus5, HTC One running Android™ 4.4 or higher.
- To install or search on iPad® use "**iPhone only®**" to find App.
- Press and hold "**LINK**" button on the meter to activate wireless App.
- Open App. Meter will connect automatically.

Menu

- Press Menu button " MENU " to connect, disconnect, and access settings.

Settings

- General settings adjust button sound, vibrate and refresh rate.

Recording settings

- Continuous reading
- Number of samples
- Sampling interval

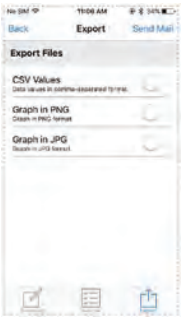
Record

- Press **Record Button** " RECORD " to start, stop.
- The number of samples will show in real time.

Logs

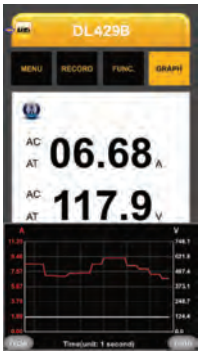
- Press **Logs Button** " LOGS " on App to view recorded data.
- Press the sample you wish to view (yyyy-mm-dd hh:mm:ss).
- Functions are noted underneath (AMP-AMP Top-Bottom) display.
- Press **Summary Button** " Summary " on App for summary.
- Press **Samples Button** " Sample " on App for sample data.
- Press **Export Button** " Export " on App to export data via email (in .CSV, .PNG, .JPG) format

Connecting and Using the App Cont.



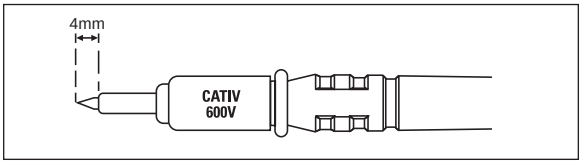
Graph

- Press Graph button " GRAPH " to view trending data in real time during measurement.



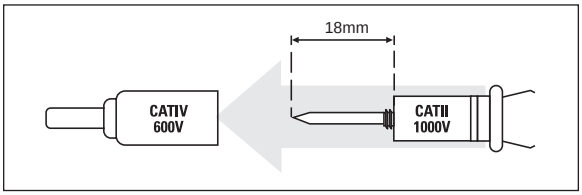
Test Lead Notes

Cat IV and CAT II Measurement Locations



- Ensure the test lead shield is pressed firmly in place. Failure to use the CAT IV shield increases arc-flash risk.

CAT II Measurement Locations

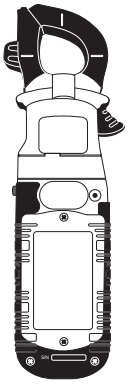


- CAT IV shields may be removed for CAT II locations. This will allow testing on recessed conductors such as standard wall outlets. Take care not to lose the shields.

⚠ **WARNING:** Test Lead category protections apply only to test leads and should not be confused with the meter's specific CAT rating. Observe the maximum category protection indicated on the meter the test leads are plugged into.

⚠ **CAUTION**: If the test leads need to be replaced, you must use a new one which should meet EN 61010-031 standard, rated CATIII 1000V or better.

Battery Replacement



- When the batteries are too low for safe operation, the Low Battery indicator will display
- Loosen the screws from the battery cover. Remove battery cover.
- Replace the old batteries with 6 new (AAA) batteries.
- Replace the battery cover.
- Replace the screws.

FCC/IC INFORMATION

NOTE: *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.*

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in any particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION ⚠ Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

This device complies with Industry Canada license - exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

WARRANTY

The DL429B is warranted to be free from defects in materials and workmanship for a period of 2 years from the date of purchase. If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at UEi's option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Batteries and consequential damage resulting from failed batteries are not covered by warranty.

Any implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the express warranty. UEi shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expenses or economic loss.

Warranty only covers hardware and does not extend to software applications.

A purchase receipt or other proof of original purchase date will be required before warranty repairs will be rendered. Instruments out of warranty will be repaired (when repairable) for a service charge.

This warranty gives you specific legal rights. You may also have other rights, which vary from state to state.

DISPOSAL

⚠ **CAUTION:** This symbol indicates that equipment and its accessories shall be subject to separate collection and correct disposal.

CLEANING

Periodically clean your meter's case using a damp cloth. DO NOT use abrasive, flammable liquids, cleaning solvents, or strong detergents as they may damage the finish, impair safety, or affect the reliability of the structural components.

STORAGE

Remove the batteries when instrument is not in use for a prolonged period of time. Do not expose to high temperatures or humidity. After a period of storage in extreme conditions exceeding the limits mentioned in the General Specifications section, allow the instrument to return to normal operating conditions before using it.